

## Corrosion Laboratory and Consulting

### Corrosion Laboratory and Consulting

Our Competence Center offers individual laboratory testing for plant-relevant corrosion phenomena as well as the assessment and consultation of applications for material technology in gaseous and aqueous media.

#### Challenge

You require support regarding corrosion technology, either for planning corrosion protection, for selection of material, production, commissioning or during operation of parts and components? You would like to use the services of a well-equipped corrosion laboratory for the simulation of technical plant-relevant environmental conditions?

#### Solution

Our internationally acknowledged corrosion experts and competent specialists for laboratory tests will diligently support you in various corrosion issues:

- Assistance with material selection, considering your specific frame conditions and the material protection in corrosion tests at room temperatures and up to 650 °C
- In addition to practice-oriented exposure tests, various important parameters for understanding and predicting the corrosion behavior of materials (e.g., current density, potential curves, impedance measurements, electrochemical noise) are identified for you in the laboratory
- Performance of online measurements of corrosion potential in the laboratory and in-situ during operation
- Examination of mechanical and technical material behavior under actual operating conditions (e.g., high-temperature water)
- Characterization of material conditions and proof of corrosion resistance during production based on short-term tests (e.g., Strauss test as per ASTM G28 (DIN EN ISO 3651) for proving the intergranular corrosion resistance, comparable tests for primary water stress corrosion cracks behavior, EPR reactor test, slow strain rate testing, crack growth tests)
- Simulation of damage cases in the laboratory, detection of factors and elaboration of problem specific corrective measures for practical use
- Creating material concepts focused on the requirements as well as the addition of experimental research, if required



Crack initiating attempt at notched bend test specimen under medium conditions

#### Customer benefits

- Minimize project risks through focused corrosion engineering in every phase of the project
- Obtain reliable results through Innovative test and measuring concepts, performance of customized component tests and well-equipped corrosion laboratories
- Achieve comprehensive expertise: material-related competence from one source based on numerous interdisciplinary interfaces

**Your performance**  
is **our** everyday **commitment**

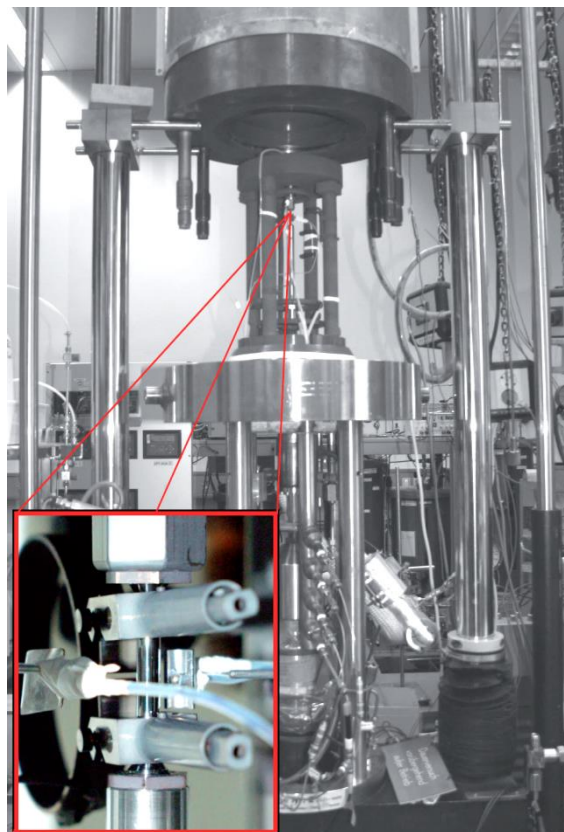
## Technical information

### Methods and work equipment for comprehensive service

- Consulting and assistance in all issues of material corrosion technology
- Comprehensive autoclave systems (static operation/refreshing operation)
- Performance of tests under increased pressure (up to 300 bar) and increased temperatures (up to 650 °C)
- High-temperature reference electrode developed in-house
- Measurement of corrosion potentials during relevant operating conditions and test temperatures
- Numerous electrochemical test benches for corrosion tests
- Modern electrochemical methods for the determination of corrosion behavior
- Corrosion tests during simultaneous mechanical stress and simulated and controlled environmental conditions (e.g., pressurized water reactor and boiling water reactor conditions, boiler water as well as different water chemistry)
- Practice-oriented exposure tests in the test solutions as well as under atmospheric stress for the detection of aging behavior (corrosion rate, kind of corrosion attack) under practice-oriented conditions
- Data bases for material use in accordance with standards and regulations
- Additionally: metallographic and analytical methods (SEM/EDX), examination of strength and ductility, various heat treatment processes, comprehensive chemical analytics

### Material corrosion technology competence from one source:

- Our team is involved in the complete life cycle of nuclear power plants - ranging from the development, design, production and assembly monitoring to the operation and evaluation of damage cases.
- Our internationally acknowledged experts use their expertise from resolving failure analyses and the definition of remedial actions as “lessons learned” in the field of material selection as well as new material concepts.
- Conversation with inspectors and third parties as well as the cooperation in relevant expert groups
- Performance of customized laboratory testing
- High competence in the field of materials and their corrosion as an integrated and focused approach
- Accreditation according to DIN EN ISO/IEC 17025:2018 \*)



Performance of a tensile test under medium conditions



Deutsche  
Akkreditierungsstelle  
D-PL-21039-03-00

\*) the accreditation is valid only for the scope as listed in appendix of certificate D-PL-21039-03-00 and in list of test methods: <https://www.dakks.de/de/akkreditierte-stellen-suche.html>; <https://www.framatome.com/EN/customer-1668/certificates-and-accreditations.html>

**Contact :** materials@framatome.com  
**www.framatome.com**

It is prohibited to reproduce the present publication in its entirety or partially in whatever form without prior written consent. Legal action may be taken against any infringer and/or any person breaching the afore mentioned prohibitions.

Subject to change without notice, errors excepted. Illustrations may differ from the original. The statements and information contained in this publication are for advertising purposes only and do not constitute an offer of contract. They shall neither be construed as a guarantee of quality or durability, nor as warranties of merchantability or fitness for a particular purpose. All statements, even those pertaining to future events, are based on information available to us at the date of publication. Only the terms of individual contracts shall be authoritative for type, scope and characteristics of our products and services.

**framato**me****